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Wireless(BT) Pocket Laser Scanner

- MS916 -

User's Manual

Version 2.0

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Regulatory Compliance Statements

FCC Warning Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

–Reorient or relocate the receiving antenna.
–Increase the separation between the equipment and receiver.
–Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
–Consult the dealer or an experienced radio/TV technician for help.

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. To maintain compliance with FCC RF exposure requirements, avoid direct contact to the transmitting antenna during transmitting.
3. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user’s authority to operate the equipment.

FCC Label Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Canadian Compliance Statement

This Class B Digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe B respecte les exigences du Reglement sur le material broilleur du Canada.

European Conformity Statement

This device complies with the R&TTE Directive (1999/5/EC) issued by the Commission of the European Community.

RoHS Statement

This device conforms to RoHS (Reduction Of Hazardous Substances) European Union regulations that set maximum concentration limits on hazardous materials used in electrical and electronic equipment.

TaiwanNCC Warning Statement

低功率電波輻射性電機管理辦法

第十二條： 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條： 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。低功率射頻電機需忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Laser Information

The Unitech MS916 series is certified in the U.S. to conform to the requirements of DHHS/CDRH 21CFR Subchapter J and to the requirements of IEC 825-1. Class II and Class 2 products are not considered to be hazardous. The MS916 series contains internally a Visible Laser Diode (VLD) whose emissions do not exceed the maximum limits as set forth in the above regulations. The scanner is designed so that there is no human access to harmful laser light during normal operation, user maintenance or prescribed service operations.

The laser safety warning label required by the DHHS/IEC for the MS916 series' optional laser scanner module is located on the memory compartment cover, on the back of the unit.

CAUTION! Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light. Use of optical instruments with the scanner, including binoculars, microscopes, and magnifying glasses, with will increase eye damage. This does not include eyeglasses worn by the user.

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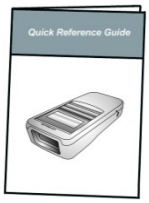
Chapter 1

Overview

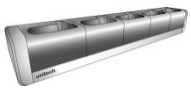
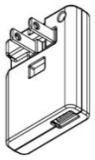
1.1 Package

Please make sure the following contents are in the MS916 gift box. If something is missing or damaged, please contact your Unitech representative.

The standard package contents

	
MS916 Scanner	**Quick Reference Guide**
Micro USB to USB Cable	**Hand Strap**

Optional accessories

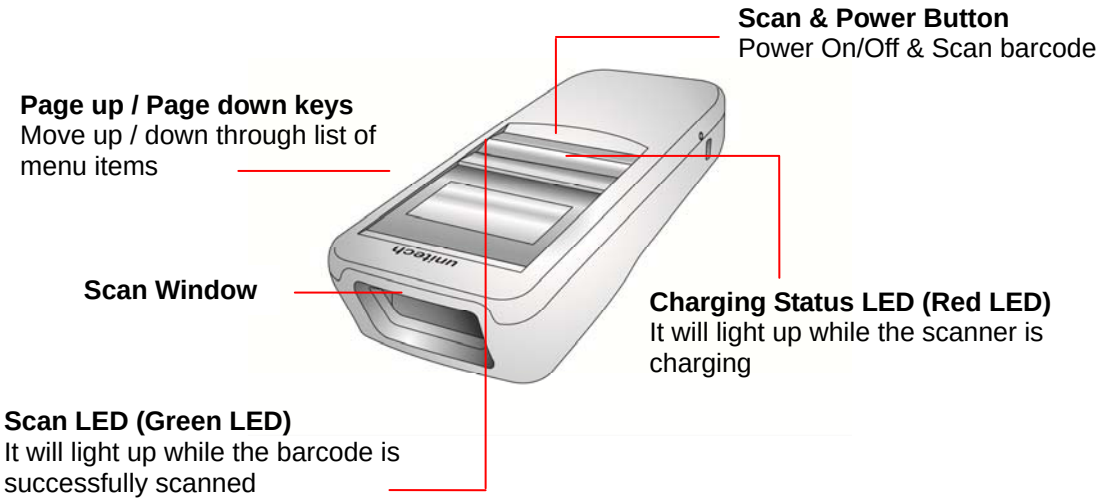
		
1-Slot Charging cradle	**5-Slot Charging cradle**	**USB Adapter**

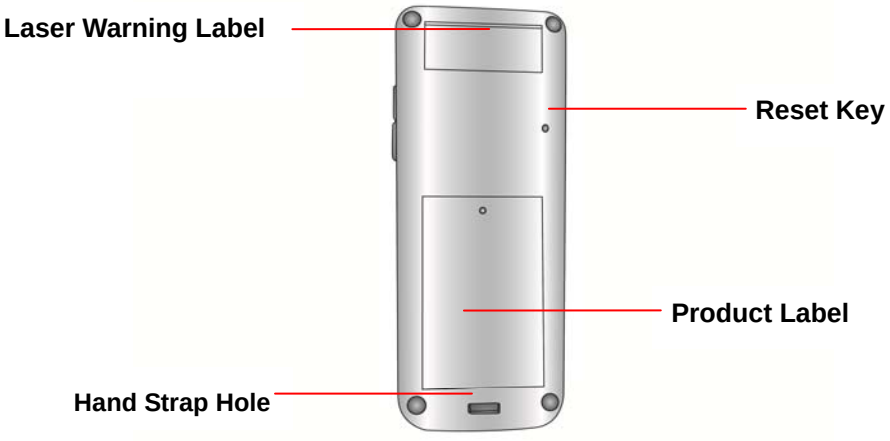
NOTE: 1. The scanner's default power off time is 5 minutes.

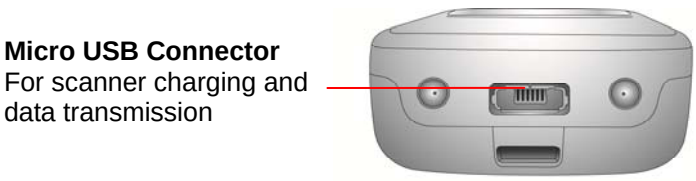
2. Please charge scanner for at least 2 hours prior to initial use.

3. The barcode with an asterisk (*) which appears in the following chapters indicates that it is the default option for the corresponding setting.

1.2 Scanner Detail

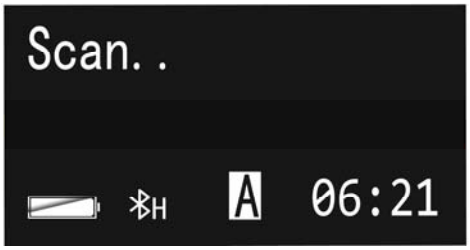

Scan & Power Button
Power On/Off & Scan barcode
Page up / Page down keys
Move up / down through list of menu items
Scan Window
Charging Status LED (Red LED)
It will light up while the scanner is charging
Scan LED (Green LED)
It will light up while the barcode is successfully scanned



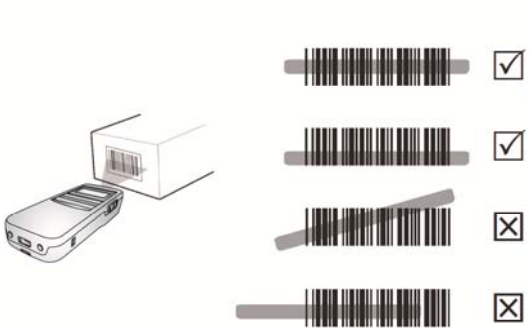


1.3 Getting Started

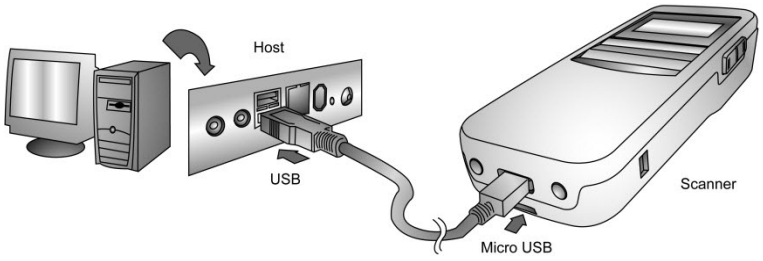
To turn on the scanner, press and hold the **Scan & Power Button** for about 2 seconds. To turn off the scanner, press and hold the **Scan & Power Button** for about 5 seconds.
After powering on, you will see the following screen on the scanner display. The scanner is now under standby mode. Now you can scan the desired barcode.
The standby display will show the current **Battery Status**, **Scanner Type**, **Operation Mode**, and **Time**.



To scan a barcode, make sure the aiming beam crosses every bar and space of the barcode.



1.4 Battery Charging



Insert the Micro USB connector into the port on the scanner and the standard USB connector of the USB cable into a USB port on the host PC.

1.5 Specifications

System

Display	1" OLED, 128 x 64
OS	Proprietary, Connect to host with Windows, Android and iOS
Memory	64 Kbytes SRAM / 16MB Flash ROM
Key	3 Keys: Page Up, Page Down, Scan with power on/off feature

Optical & Performance

Receiving Device	Laser Engine
Light Source	650 nm visible laser diode
Max. Resolution	4mil
Scan Rate	104 scans/second
Skew Angle	47±3 degrees
Pitch Angle	35±3 degrees
Printing Contrast Scale	minimum 25%
Depth of Field (DOF PCS=80%)	Symbology | Density | Near | Far Code 39, 4 mils | 2.5 cm | 13.97 cm Code 39, 5 mils | 3.18 cm | 20.32 cm Code 39, 7.5 mils | 3.81 cm | 33.02 cm Code 39, 10 mils | 3.81 cm | 45.72 cm Code 39, 15 mils | 3.81 cm | 71.72 cm Code 39, 20 mils | 4.45 cm | 83.82 cm Code 39, 40 mils | x | 91.44 cm Code 39, 55 mils | x | 114.3 cm UPC, 13 mils | 3.81 cm | 60.96 cm

Functionality

Symbologies

1D	Code 39, Full ASCII Code 39, Interleave 2 of 5, UPC A/E/E1, MSI, Codabar, Code 11, EAN8/13, Code 93, Code 128, EAN 128, Code32, GS1 databar Code, Bookland EAN, Discreate 2 of 5, Chinese 2 of 5, ISBT 128, UCC Coupon Extended Code, Bookland 128
Operation Mode	Trigger mode, Pulse mode, Flash mode, Continuous Mode, Buffer mode
Data Formatting	Prefix, Suffix, Code ID, Reformatting Date

Environmental

ESD Protection	Functional after 8K Contact and 12K Air
Mechanical Shock	1.5m onto concrete (scanner only)
IP Rate	IP42
Operating Temperature	0°C to 50°C
Storage Temperature	-30°C to 70°C
Relative Humidity	95% non-condensing

Electrical

Operation Voltage	DC 3V to 5V
Current Consumption	Operation mode: < 125mAh, Standby mode: < 39mAh
Battery Type	Rechargeable Li-ion battery
Battery Capacity	680 mAh
Battery Charging time	Fully charged in about 3 hours
Operating Time	8 hours at condition of 1 scan/5 sec

Communication

Radio Frequency	Bluetooth V2.1+EDR. Class 2
Protocol	Wireless SPP & HID profiles
Range	Up to 30 Feet (Open space)
Interface supported	Micro USB

Mechanical

Scanner Dimension	H21.1*W36.9*L95.9mm
Scanner Weight	63g
Switch life	10 million times

Regulation Approvals

CE, FCC, BSMI, VCCI

1.6 LED Indicator/Beeper sequence

Division	Action/Status	LED for Barcode reading & Communication	LED for Battery status	Beep / Sound
Power On		Red Light blinks once		One High Beep
Auto Power Off				Three short beeps at 15 seconds before power off
USB connection				Low- Medium -High
USB disconnection				High- Medium -Low
Barcode reading	▪ Wedge & Auto (When BT Connect)	Green Light blinks once		One Beep
	▪ Batch (When BT Connect)	Green Light blinks once		One short Beep
	▪ Batch & Auto & Wedge (When BT Disconnect)	Green Light blinks once		One short Beep
Data sent to PC	▪Data sent to PC successfully	Green Light blinks once		Dee-Du
	▪Fail sent data to PC (Inventory)	Green Light blinks once		Dee-Dee-Dee
Data delete / All Data delete		Deleting- Green light always on		
		Completed - Green light off		
Power Saving Mode		Green light always on		
BT connection				Low- Medium -High
BT disconnection				High- Medium -Low
Low Battery Alarm (<10%)			Blinking Red Light	
Battery charging			Red light always on	
Battery Fully charged			Green light always on	

Chapter 2

Display Menu Tree

To enter main menu of MS916, press and hold Page Down button and then press Page Up button. You will see the following screen on the MS916 display. Now you can use Page Up/Down button to scroll through the menu and use Scan button to make your selection.

You can access the desired function refer to the **Menu Tree**.

Top Menu	Sub Menu Level 1	Sub Menu Level 2	Options/Result	Default Setting
General Setting	**1. Scanner Type**		BT HID/USB SPP/ BT SPP/BT SPP (Slave)	BT HID
	2. Operation Mode		Auto/Wedge/Batch	Auto Mode
	3. Date/Time	3.1 View Date/Time	Show date and time	N/A
		3.2 Set Date/Time	SET DATE/SET TIME	2015-01-01 08:00:00
		3.3 Time Display	Auto/Always	Auto
		3.4 Exit	Return to the previous menu	N/A
	4. Power Manager	4.1 Power Saving	Disable/30/20/15/10/5 Sec.	15 Sec.
		4.2 Auto Power Off	Disable/30/20/15/10/5/3/1 Min.	5 Min.
		4.3 Exit	Return to the previous menu	N/A
	5. Setup By Label		Enable/Disable	Enable
	6. FAC Default	6.1 Restore to FAC Default?	Yes/No	No
	7. FW Version		Show Firmware Version	V0.50
	8. Exit		Return to the previous menu	N/A

Top Menu	Sub Menu Level 1	Sub Menu Level 2	Options/Result	Default Setting
Data & Memory	**1. Buffer Data**	1.1. Erase Previous Buffer Entry?	Yes/No	No
	2. Data Terminator		CR/None/TAB/CRLF/LF	CR
	3. Free MEM Space		Show Free Buffer Memory Space	20 KB
	4. Erase Memory	4.1. Erase Buffer?	Yes/No	No
	5. Exit		Return to the previous menu	N/A
Bluetooth CFG	**1. BT Pairing**	BT Pairing in progress	(Press scan key to cancel)	N/A
	2. BT MAC Address		Show BT MAC Address	N/A
	3. Paired Device		Show BT paired Name and MAC Address	N/A
	4. Remove Pair	4.1 Remove Current BT Pair ?	Yes/No (If a BT device has been paired with MS916)	No
	5. BT FW Version		Show BT Firmware Version	N/A
	6. Exit		Return to the previous menu	N/A

Top Menu	Sub Menu Level 1	Sub Menu Level 2	Options/Result	Default Setting
Beep & Vibrate	**1. Beeper Volume**		High/Medium/Low/Mute	Medium
	2.Vibrator		Enable/Disable	Disable
	3. Indicators	3.1 Good Read	Beeper&Vibrator/Vibrator/Beeper/None	Beeper&Vibrator
		3.2 Connection	Beeper&Vibrator/Vibrator/Beeper/None	Beeper&Vibrator
		3.3 System Setting	Beeper&Vibrator / Vibrator/Beeper/None	Beeper&Vibrator
		3.4 System Warn/Err	Beeper&Vibrator /Vibrator/Beeper/None	Beeper&Vibrator
		3.5 PwrOn	Beeper&Vibrator /Vibrator/Beeper/None	Beeper&Vibrator
		3.6 PwrOff Alarm	Beeper&Vibrator /Vibrator/Beeper/None	Beeper&Vibrator
		3.7 Exit	Return to the previous menu	N/A
Barcode setting	**1. Disable All Code**		ON/OFF	OFF
		***UPC-A**	Enable/Disable	Enable
		***UPC-E**	Enable/Disable	Enable
		***EAN-8**	Enable/Disable	Enable
		***EAN-13**	Enable/Disable	Enable
		***Code 39**	Enable/Disable	Enable
		***Code 128**	Enable/Disable	Enable
		***EAN 128**	Enable/Disable	Enable
		***I 2 of 5**	Enable/Disable	Enable
		Code 93	Enable/Disable	Disable
		Codabar	Enable/Disable	Disable
		Code 11	Enable/Disable	Disable
		MSI	Enable/Disable	Disable
		UPC-E1	Enable/Disable	Disable
		Bookland EAN	Enable/Disable	Disable
		Discreate 2 of 5	Enable/Disable	Disable
		Chinese 2 of 5	Enable/Disable	Disable
		GS1-14	Enable/Disable	Disable
Remote setting				

Chapter 3

Installation

3.1 BT HID

BT HID*

Establishing BT connection in BT HID mode.

1. Use MS916 to scan BT HID barcode.
2. Press Page Down key then press Scan button to enter BT pairng mode.
3. Double-click **Bluetooth Device** icon in the toolbar on your PC. Select **Add New Devices**. When you see a device list windows, choose MS916-XXXX and then press **Next**. PC now is establishing BT connection.
4. MS916 will beep when your PC successfully establish a BT connection with MS916.

3.2 BT SPP

BT SPP

Establishing BT connection in BT SPP mode.

1. To establish bluetooth connection between MS916 and your PC in **BT SPP** mode, you must install unitech CDC driver on your PC in advance.
2. Use MS916 to scan **BT SPP** barcode.
3. Press Page Down key then press Scan button to enter BT pairng mode.
4. Double-click **Bluetooth Device** icon in the toolbar on your PC. Select **Add New Devices**. When you see a device list windows, choose MS916-XXXX and then press **Next**.
5. When PC is establishing a bluetooth connection in **BT SPP** mode with MS916, windows system will automatically install the required drivers.

6. Back to your PC toolbar, right click on the **Bluetooth Device** icon , choose **Open Settings**. Go to **COM Port** page and select in-coming COM port , for example **COM 28**.
7. MS916 will beep when your PC successfully establish a BT connection with MS916.

3.3 BT SPP (Slave)

BT SPP (Slave)

Establishing BT connection in BT SPP (Slave) mode.

1. To establish bluetooth connection between MS916 and your PC in **BT SPP (Slave)** mode, you must install unitech CDC driver on your PC in advance.
2. Use MS916 to scan **BT SPP (Slave)** barcode.
3. Press Page Down key then press Scan button to enter BT pairng mode.
4. Double-click **Bluetooth Device** icon in the toolbar on your PC. Select **Add New Devices**. When you see a device list windows, choose MS916-XXXX and then press **Next**.
5. When PC is establishing a bluetooth connection in **BT SPP (Slave)** mode with MS916, windows system will automatically install the required drivers.
6. Back to your PC toolbar, right click on the **Bluetooth Device** icon , choose **Open Settings**. Go to **COM Port** page and select out-going COM port , for example **COM 27**.
7. MS916 will beep when your PC successfully establish a BT connection with MS916.

3.4 USB SPP

USB SPP

Establishing BT connection in USB SPP mode.

1. To establish bluetooth connection between MS916 and your PC in **USB SPP** mode, you must install unitech CDC driver on your PC in advance.
2. Use MS916 to scan **USB SPP** barcode.
3. Connect MS916 to your PC with a Micro USB-USB cable.
4. Back to your PC, open the application named **‘Tera Term’** and then choose the **COM Port** named **'CDC USB'**.

Chapter 4

Command settings

4.1 System setting

4.1.1 Default

By scan below bar code can restore the factory setting

Factory Default

4.1.2 Display FW version

By scan below bar code to show the current F/W & BT version

FW version

4.1.3 Auto Power Off

By scan below bar code to setting the time frame for auto power off

1 Minute

3 Minutes

5 Minutes *

10 Minutes

15 Minutes

20 Minutes

30 Minutes

Disable

4.1.4 Power Saving

By scan below bar code to setting the time frame for power saving

5 Seconds

10 Seconds

15 Seconds

20 Seconds

30 Seconds

Disable

4.2 Bluetooth pairing

4.2.1 Enter Paring mode

By Scan below bar code to enter BT pairing mode

BT Pairing

4.2.2 Paired device info.

By scan below bar code to show the current paired device information

Paired Device

4.2.3 Remove the pair

You can scan below bar code to remove BT pair

Remove Pair

4.3 Output data transmit

4.3.1 Auto mode

In this mode, When scanner is out off BT transmit range, the scanned data will be stored in the memory and transmit data automatically when back to in-range.

Auto mode*

4.3.1.1 Erased last memory entry

By scan below bar code to erase last scanned data in memory

Erased Last Memory Entry

4.3.1.2 Erase all data in buffer (Erase Memory)

By scan below bar code to erase all data in the memory

Erase Memory

4.3.1.3 Check buffer memory space

By scan below bar code to check buffer memory space

Free Memory Space

4.3.2 Wedge mode

In this mode, the data only transmit while the BT is connected

Wedge mode

4.3.3 Batch mode

In this mode, the scanned data will be stored in the memory all the time and transmit data only when BT is conncted by scanned the “send batch” bar code

Batch mode

4.3.3.1 Send batch

By scan below bar code to send the stored data to host

Send Batch

4.3.3.2 Erase last memory entry

By scan below bar code to erase last scanned data in batch memory

Erase Last Memory Entry

4.3.3.3 Erase all data in batch (Erase memory)

By scan below bar code to erase all data in batch momery

Erase Memory

4.3.3.4 Free batch memory space

By scan below bar code to check batch memory space

Free Memory Space

4.4 BT Config

4.4.1 HID keyboard block delay

In BT HID mode, by scan below time frame to set the block delay time. Default is 10ms.

10 ms *

50 ms

100 ms

500 ms

1 Sec.

3 Sec.

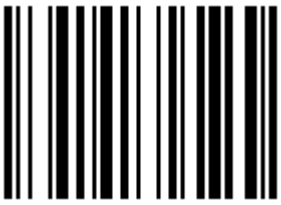
4.4.2 HID keyboard inter-character delay

In BT HID mode, by scan below time frame to set inter-character delay time. Default is 1ms.

1 ms *

5 ms

10 ms



20 ms

4.4.3 HID keyboard Case

In BT HID mode, by scan below bar code to change the alphabet case. Scan ‘’to lower” barcode to output data in lower case; or scan “to upper” barcode to output data in upper case. Default setting: “auto trace” to have original scanned data transmitted.

Auto Trace *

To Lower

To Upper

4.4.4 HID keyboard language

In BT HID mode, by scan below bar code to change keyboard language.
Default is US English

US English *

UK English

Swiss

Swedish

Norwegian

Italian

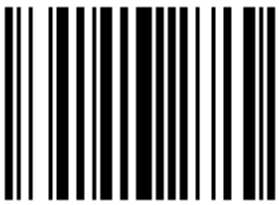
German

French

Danish

Partial ALT

Japanese (OADG109)



Spanish

ALT Mode

4.5 Beep & Vibration

4.5.1 Beep

By scan below bar code to adjust beep volume. Default: Medium volume

4.5.1.1 High volume

High Volume

4.5.1.2 Medium volume *

Medium Volume*

4.5.1.3 Low volume

Low Volume

4.5.1.4 Mute

Mute

4.5.2 Vibration

The vibration is off in default. By scan below bar code to open vibration function

Enable Vibrator

Disable Vibrator *

4.6 Scan mode

Choose one of the options below to trigger the scan engine. Bar codes are on the following page.

4.6.1 Trigger

A trigger pull activates the laser and decode processing. The laser remains on and decode processing continues until a trigger release, a valid decode, or the Laser On Time-out is reached.

*Trigger

4.6.2 Pulse

A trigger pull activates the laser and decode processing. The laser remains on and decode processing continues until a valid decode or the Laser On Time-out is reached.

Pulse

4.6.3 Continuous

The laser is always on and decoding.

Continuous

4.6.4 Flash

This trigger mode is used for trigger less operation. Scanning range is reduced in this mode. This mode cannot be used with engines that support an aim mode.

Flash

4.7 Laser on time

This parameter sets the maximum time decode processing continues during a scan attempt. It is programmable in 0.1 second increments from 0.50 to 25.5 seconds.

To set a Laser On Time, scan the bar code below. Next scan two numeric bar codes beginning on Appendix B that correspond to the desired on time. Single digit numbers must have a leading zero. For example, to set an on time of 0.5 seconds, scan the bar code below, then scan the "0", "5" and "0" bar codes; to set an on time of 10.5 seconds, scan the bar code below, then scan the "1", "0" and "5" bar codes. To change the selection or cancel an incorrect entry, scan Cancel on Appendix B

.

Laser On Time
(Default: 3.0 sec.)

4.8 Aim duration

It is programmable in 0.1 second increments from 0.0 to 9.9 seconds. No aim pattern is visible when the value is 0.0.

To set an aim duration, scan the bar code below. Next scan two numeric bar codes beginning on *Appendix B* that correspond to the desired aim duration. Single digit numbers must have a leading zero. For example, to set an aim duration of 0.5 seconds, scan the bar code below, then scan the “0” and “5” bar codes. To change the selection or cancel an incorrect entry, scan Cancel on *Appendix B*.

.

Aim Duration
(Default: 0.0 sec.)

4.9 Time out between same symbol

When in Continuous triggering mode, this parameter sets the minimum time that must elapse before the scan engine decodes a second bar code identical to one just decoded. This reduces the risk of accidently scanning the same symbol twice. It is programmable in 0.1 second increments from 0.0 to 9.9 seconds.

Time-out Between Same Symbol
(Default: 1.0 sec.)

To set a time-out between same symbol, scan the bar code below. Next scan two numeric bar codes beginning on *Appendix B* that correspond to the desired time-out. Single digit values must have a leading zero. For example, to set a time-out of 0.5 seconds, scan the bar code below, then scan the “0” and “5” bar codes. To change the selection or cancel an incorrect entry, scan Cancel on *Appendix B*.

4.10 Transmit “No Read” message

Enable this option to transmit “NR” if a symbol does not decode during the timeout period or before the trigger is released. Any enabled prefix or suffixes are appended around this message.

Enable No Read
(0x01)

When disabled, and a symbol cannot be decoded, no message is sent to the host.

***Disable No Read**

4.11 Data Terminator

By scan below bar code to terminate data

None

CR*

CRLF

LF

TAB

4.12 Prefix / Suffix

4.12.1 Prefix/Suffix Values

A prefix and/or one or two suffixes can be appended to scan data for use in data editing. To set these values, scan a four-digit number (i.e. four bar codes) that corresponds to A*SCII values. See the Table 5-2 an*d *Numeric Bar Codes on Appendix B.* To change the selection or cancel an incorrect entry, scan *Cancel on Appendix B*. To set the Prefix/Suffix values via serial commands, see *Setting Prefixes and Suffixes Via Serial Commands on Table 4-1.*

✓ ***NOTE*** In order to use Prefix/Suffix values, the *Scan Data Transmission Format on* 4.12.2 *Scan* data transmission format must be set.

Scan Prefix

Scan Suffix 1

Scan Suffix 2

Data Format Cancel

Table 4-1 *Character Equivalents*

Scan Value	Keystroke	Scan Value	Keystroke
1000	CTRL 2	1033	!
1001	CTRL A	1034	‘
1002	CTRL B	1035	#
1003	CTRL C	1036	$
1004	CTRL D	1037	%
1005	CTRL E	1038	&
1006	CTRL F	1039	‘
1007	CTRL G	1040	(
1008	CTRL H	1041	)
1009	CTRL I	1042	*
1010	CTRL J	1043	+
1011	CTRL K	1044	,
1012	CTRL L	1045	-
1013	CTRL M	1046	.
1014	CTRL N	1047	/
1015	CTRL O	1048	0
1016	CTRL P	1049	1
1017	CTRL Q	1050	2
1018	CTRL R	1051	3
1019	CTRL S	1052	4
1020	CTRL T	1053	5
1021	CTRL U	1054	6
1022	CTRL V	1055	7
1023	CTRL W	1056	8
1024	CTRL X	1057	9
1025	CTRL Y	1058	:
1026	CTRL Z	1059	;
1027	CTRL [	1060	<
1028	CTRL \	1061	=
1029	CTRL]	1062	>
1030	CTRL 6	1063	?
1031	CTRL -	1064	@
1032	Space	1065	A

Scan Value	Keystroke
1066	B
1067	C
1068	D
1069	E
1070	F
1071	G
1072	H
1073	I
1074	J
1075	K
1076	L
1077	M
1078	N
1079	O
1080	P
1081	Q
1082	R
1083	S
1084	T
1085	U
1086	V
1087	W
1088	X
1089	Y
1090	Z
1091	[
1092	\
1093	]
1094	^
1095	_
1096	‘
1097	a

Scan Value	Keystroke
1098	b
1099	c
1100	d
1101	e
1102	f
1103	g
1104	h
1105	i
1106	j
1107	k
1108	l
1109	m
1110	n
1111	o
1112	p
1113	q
1114	r
1115	s
1116	t
1117	u
1118	v
1119	w
1120	x
1121	y
1122	z
1123	{
1124	|
1125	}
1126	~
1127	Undefined

4.12.2 Scan data transmission format

To change the Scan Data Transmission Format, scan one of the eight bar codes corresponding to the desired format.

*Data As Is

<PREFIX> <DATA >

<DATA> <SUFFIX 1>

<PREFIX> <DATA> <SUFFIX 1>

<DATA> <SUFFIX 2>

<PREFIX> <DATA> <SUFFIX 2>

<DATA> <SUFFIX 1> <SUFFIX 2>

<PREFIX> <DATA> <SUFFIX 1> <SUFFIX 2>

Chapter 5

Symbology

5.1 Disable All Symbologies

Scan the bar code below to disable the decoding of all symbologies. Use this to simplify selecting a single symbology to decode by scanning this, then scanning the desired enable code type bar code. Note that the decoder can still decode parameter bar codes.

Disable All Symbologies

5.2 UPC/EAN

5.2.1 UPC-A

To enable or disable UPC-A, scan the appropriate bar code below.

***Enable UPC-A**

Disable UPC-A

5.2.2 UPC-E

To enable or disable UPC-E, scan the appropriate bar code below.

*Enable UPC-E

Disable UPC-E

5.2.3 UPC-E1

To enable or disable UPC-E1, scan the appropriate bar code below.

✓ ***NOTE*** UPC-E1 is not a UCC (Uniform Code Council) approved symbology.

Enable UPC-E1

*Disable UPC-E1

5.2.4 EAN-8

To enable or disable EAN-8, scan the appropriate bar code below.

*Enable EAN-8

Disable EAN-8

5.2.5 EAN-13

To enable or disable EAN-13, scan the appropriate bar code below.

*Enable EAN-13

Disable EAN-13

5.2.6 Bookland EAN

To enable or disable EAN Bookland, scan the appropriate bar code below.

Enable Bookland EAN

*Disable Bookland EAN

✓ *NOTE* If you enable Bookland EAN, select a *Bo*okland ISBN Format. Also select either Decode UPC/EAN Supplementals, Autodiscriminate UPC/EAN Supplementals, or Enable 978/979 Supplemental Mode in *Decode UPC/EAN Supplementals.*

5.2.7 Bookland ISBN

If you enabled Bookland EAN using *Enable/Disable Bookland EA*N, select one of the following formats for Bookland data:

- **Bookland ISBN-10** - The scanner reports Bookland data starting with 978 in traditional 10-digit format with the special Bookland check digit for backward-compatibility. Data starting with 979 is not considered Bookland in this mode.
- **Bookland ISBN-13** - The scanner reports Bookland data (starting with either 978 or 979) as EAN-13 in 13-digit format to meet the 2007 ISBN-13 protocol.

***Bookland ISBN-10**

Bookland ISBN-13

✓ ***NOTE*** For Bookland EAN to function properly, first enable Bookland EAN using *Enable/Disable B*ookland EAN.

5.2.8 Decode UPC/EAN Supplementals

Supplementals are bar codes appended according to specific format conventions (e.g., UPC A+2, UPC E+2, EAN 13+2). The following options are available:

- If you select **Ignore UPC/EAN with Supplementals**, and the scanner is presented with a UPC/EAN plus supplemental symbol, the scanner decodes UPC/EAN and ignores the supplemental characters.
- If you select **Decode UPC/EAN with Supplementals**, the scanner only decodes UPC/EAN symbols with supplemental characters, and ignores symbols without supplementals.

- If you select **Autodiscriminate UPC/EAN Supplementals**, the scanner decodes UPC/EAN symbols with supplemental characters immediately. If the symbol does not have a supplemental, the scanner must decode the bar code the number of times set via *Decode UPC/EAN Supplemental Redundancy* before transmitting its data to confirm that there is no supplemental.
- If you select one of the following **Supplemental Mode** options, the scanner immediately transmits EAN-13 bar codes starting with that prefix that have supplemental characters. If the symbol does not have a supplemental, the scanner must decode the bar code the number of times set via *Decode UPC/EAN Supplemental Redundancy* before transmitting its data to confirm that there is no supplemental. The scanner transmits UPC/EAN bar codes that do not have that prefix immediately.
  - **Enable 378/379 Supplemental Mode.**
  - **Enable 978/979 Supplemental Mode.**

✓ ***NOTE*** If you select 978/979 Supplemental Mode and are scanning Bookland EAN bar codes, see *Enable/Disable Bookland EAN* to enable Bookland EAN, and select a format using *Bookland ISBN Format*.

  - **Enable 977 Supplemental Mode.**
  - **Enable 414/419/434/439 Supplemental Mode.**
  - **Enable 491 Supplemental Mode.**
  - **Enable Smart Supplemental Mode** - applies to EAN-13 bar codes starting with any prefix listed previously.
  - **Supplemental User-Programmable Type 1** - applies to EAN-13 bar codes starting with a 3-digit user-defined prefix. Set this 3-digit prefix using *User-Programmable Supplementals*.
  - **Supplemental User-Programmable Type 1 and 2 -** applies to EAN-13 bar codes starting with either of two 3-digit user-defined prefixes. Set the 3-digit prefixes using *User-Programmable Supplementals***.**
  - **Smart Supplemental Plus User-Programmable 1** - applies to EAN-13 bar codes starting with any prefix listed previously or the user-defined prefix set using *User-Programmable Supplementals*.

- **Smart Supplemental Plus User-Programmable 1 and 2 -** applies to EAN-13 bar codes starting with any prefix listed previously or one of the two user-defined prefixes set using *User-Programmable Supplementals*.

✓ ***NOTE*** To minimize the risk of invalid data transmission, select either to decode or ignore supplemental characters.

Select the desired option by scanning one of the following bar codes.

5.2.8.1 Decode UPC/EAN With Supplementals

Decode UPC/EAN With Supplementals

5.2.8.2 *Ignore UPC/EAN With Supplementals

***Ignore UPC/EAN With Supplementals**

5.2.8.3 Autodiscriminate UPC/EAN Supplementals

Autodiscriminate UPC/EAN Supplementals

5.2.8.4 Enable 378/379 Supplemental Mode

Enable 378/379 Supplemental Mode

5.2.8.5 Enable 978/979 Supplemental Mode

Enable 978/979 Supplemental Mode

5.2.8.6 Enable 977 Supplemental Mode

Enable 977 Supplemental Mode

5.2.8.7 Enable 414/419/434/439 Supplemental Mode

Enable 414/419/434/439 Supplemental Mode

5.2.8.8 Enable 491 Supplemental Mode

Enable 491 Supplemental Mode

5.2.8.9 Enable Smart Supplemental Mode

Enable Smart Supplemental Mode

5.2.8.10 Supplemental User-Programmable Type 1

Supplemental User-Programmable Type 1

5.2.8.11 Supplemental User-Programmable Type 1 and 2

Supplemental User-Programmable Type 1 and 2

5.2.8.12 Smart Supplemental Plus User-Programmable 1

Smart Supplemental Plus User-Programmable 1

5.2.8.13 Smart Supplemental Plus User-Programmable 1 and 2

Smart Supplemental Plus User-Programmable 1 and 2

5.2.9 User-Programmable Supplementals

If you selected a Supplemental User-Programmable option from *Decode UPC/EAN Supplementals*, select **User-Programmable Supplemental 1** to set the 3-digit prefix. Then select the 3 digits using the numeric bar codes beginning on Appendix B. Select **User-Programmable Supplemental 2** to set a second 3-digit prefix. Then select the 3 digits using the numeric bar codes beginning on Appendix B.

User-Programmable Supplemental 1

User-Programmable Supplemental 2

5.2.10 Decode UPC/EAN Supplemental Redundancy

With *Autodiscriminate UPC/EAN Supplementals* selected, this option adjusts the number of times a symbol without supplementals are decoded before transmission. The range is from 2 to 30 times. Five or above is recommended when decoding a mix of UPC/EAN symbols with and without supplementals, and the autodiscriminate option is selected.

Scan the bar code below to select a decode redundancy value. Next scan two numeric bar codes beginning on Appendix B. Single digit numbers must have a leading zero. To change the selection or cancel an incorrect entry, scan *Cancel* on Appendix B.

Decode UPC/EAN Supplemental Redundancy (Default: 7)

5.2.11 Transmit UPC-A Check Digit

Scan the appropriate bar code below to transmit the symbol with or without the UPC-A check digit.

***Transmit UPC-A Check Digit**

Do Not Transmit UPC-A Check Digit

5.2.12 Transmit UPC-E Check Digit

Scan the appropriate bar code below to transmit the symbol with or without the UPC-E check digit.

*Transmit UPC-E Check Digit

Do Not Transmit UPC-E Check Digit

5.2.13 Transmit UPC-E1 Check Digit

Scan the appropriate bar code below to transmit the symbol with or without the UPC-E1 check digit.

*Transmit UPC-E1 Check Digit

Do Not Transmit UPC-E1 Check Digit

5.2.14 UPC-A Preamble

Preamble characters (Country Code and System Character) can be transmitted as part of a UPC-A symbol.
Select one of the following options for transmitting UPC-A preamble to the host device: transmit system character only, transmit system character and country code (“0” for USA), or transmit no preamble.

No Preamble
(<DATA>)

***System Character**
(<SYSTEM CHARACTER> <DATA>)

System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

5.2.15 UPC-E Preamble

Preamble characters (Country Code and System Character) can be transmitted as part of a UPC-E symbol.
Select one of the following options for transmitting UPC-E preamble to the host device: transmit system character only, transmit system character and country code (“0” for USA), or transmit no preamble.

No Preamble
(<DATA>)

*System Character
(<SYSTEM CHARACTER> <DATA>)

System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

5.2.16 UPC-E1 Preamble

Preamble characters (Country Code and System Character) can be transmitted as part of a UPC-E1 symbol.
Select one of the following options for transmitting UPC-E1 preamble to the host device: transmit system character only, transmit system character and country code (“0” for USA), or transmit no preamble.

No Preamble
(<DATA>)

***System Character**
(<SYSTEM CHARACTER> <DATA>)

System Character & Country Code
(< COUNTRY CODE> <SYSTEM CHARACTER> <DATA>)

5.2.17 Convert UPC-E to UPC-A

Enable this parameter to convert UPC-E (zero suppressed) decoded data to UPC-A format before transmission. After conversion, data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).
Scan DO NOT CONVERT UPC-E TO UPC-A to transmit UPC-E (zero suppressed) decoded data.

Convert UPC-E to UPC-A (Enable)

*Do Not Convert UPC-E to UPC-A (Disable)

5.2.18 Convert UPC-E1 to UPC-A

Enable this parameter to convert UPC-E1 (zero suppressed) decoded data to UPC-A format before transmission. After conversion, data follows UPC-A format and is affected by UPC-A programming selections (e.g., Preamble, Check Digit).
Scan DO NOT CONVERT UPC-E TO UPC-A to transmit UPC-E1 (zero suppressed) decoded data.

Convert UPC-E1 to UPC-A (Enable)

*Do Not Convert UPC-E1 to UPC-A (Disable)

5.2.19 EAN Zero Extend

When enabled, this parameter adds five leading zeros to decoded EAN-8 symbols to make them compatible in format to EAN-13 symbols.
Disable this parameter to transmit EAN-8 symbols as is.

Enable EAN Zero Extend

*Disable EAN Zero Extend

5.2.20 UCC Coupon Extended Code

The UCC Coupon Extended Code is an additional bar code adjacent to a UCC Coupon Code. To enable or disable UCC Coupon Extended Code, scan the appropriate bar code below.

Enable UCC Coupon Extended Code

***Disable UCC Coupon Extended Code**

5.3 Code 128

5.3.1 Code 128

To enable or disable Code 128, scan the appropriate bar code below.

Disable Code 128

***Enable Code 128**

5.3.2 GS1-128 (formerly UCC/EAN-128)

To enable or disable GS1-128, scan the appropriate bar code below. (See Appendix A, Miscellaneous Code Information for details on *GS1-128 (formerly UCC/EAN-128)*.)

Disable GS1-128

*Enable GS1-128

GS1-128 (formerly UCC/EAN-128)

GS1-128 is a convention for printing data fields with standard Code 128 bar code symbols. GS1-128 symbols are distinguished by a leading FNC 1 character as the first or second character in the symbol. Other FNC 1 characters are used to delineate fields.

When GS1-128 symbols are read, they are transmitted after special formatting strips off the leading FNC 1 character, and replaces other FNC 1 characters with the ASCII 29 (GS) control character.

When AIM symbology identifiers are transmitted, the modifier character indicates the position of the leading FNC 1 character according to AIM guidelines. For example, **]c1** indicates a GS1-128 symbol with a leading FNC1 character.

Standard Code 128 bar codes which do not have a leading FNC 1 may still be used, but are not encoded according to the GS1-128 convention. Standard Code 128 and GS1-128 may be mixed in an application. The SE955 autodiscriminates between these symbols, and can enable or disable one or both code types. Table 5-1 indicates the behavior of the SE955 in each of the four possible parameter settings.

Table 5-1 *Reading Standard Code 128 & GS1-128*

Standard Code 128	GS1-128	Effect and Example
Disable	Disable	No Code 128 symbols can be read.
Disable	Enable	Read only symbols with leading FNC 1. Examples: ^{FNC1}ABCD^{FNC1}E are read as ABCD^{29}E A^{FNC1}BCD^{FNC1}E are read as ABCD^{29}E ^{FNC1FNC1}ABCD^{FNC1}E are read as ABCD^{29}E ABCD^{FNC1}E cannot be read

		ABCDE cannot be read
Enable	Disable	Read only symbols without leading FNC 1. Examples: ^{FNC1}ABCD^{FNC1}E cannot be read A^{FNC1}BCD^{FNC1}E cannot be read ^{FNC1FNC1}ABCD^{FNC1}E cannot be read ABCD^{FNC1}E is read as ABCD^{29}E ABCDE is read as ABCDE
Enable	Enable	Read both types of symbols. Examples: ^{FNC1}ABCD^{FNC1}E are read as ABCD^{29}E A^{FNC1}BCD^{FNC1}E are read as ABCD^{29}E ^{FNC1FNC1}ABCD^{FNC1}E are read as ABCD^{29}E ABCD^{FNC1}E is read as ABCD^{29}E ABCDE is read as ABCDE

5.3.3 ISBT 128

To enable or disable ISBT 128, scan the appropriate bar code below.

Disable ISBT 128

***Enable ISBT 128**

5.4 Code 39

5.4.1 Code 39

To enable or disable Code 39, scan the appropriate bar code below.

***Enable Code 39**

Disable Code 39

5.4.2 Trioptic Code 39

Trioptic Code 39 is a variant of Code 39 used in marking computer tape cartridges. Trioptic Code 39 symbols always contain six characters.
To enable or disable Trioptic Code 39, scan the appropriate bar code below.

Enable Trioptic Code 39

*Disable Trioptic Code 39

✓ ***NOTE*** Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously. If an error beep sounds when enabling Trioptic Code 39, disable Code 39 Full ASCII and try again.

5.4.3 Convert Code 39 to Code 32

Code 32 is a variant of Code 39 used by the Italian pharmaceutical industry. Scan the appropriate bar code below to enable or disable converting Code 39 to Code 32.

✓ ***NOTE*** Code 39 must be enabled in order for this parameter to function.

Enable Convert Code 39 to Code 32

*Disable Convert Code 39 to Code 32

5.4.4 Code 32 Prefix

Enable this parameter to add the prefix character “A” to all Code 32 bar codes. Convert Code 39 to Code 32 must be enabled for this parameter to function.

Enable Code 32 Prefix

*Disable Code 32 Prefix

5.4.5 Set Lengths for Code 39

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Lengths for Code 39 may be set for any length, one or two discrete lengths, or lengths within a specific range. If Code 39 Full ASCII is enabled, **Length Within a Range** or **Any Length** are the preferred options.

✓ ***NOTE*** When setting lengths, single digit numbers must always be preceded by a leading zero.

One Discrete Length - This option limits decodes to only those Code 39 symbols containing a selected length. Lengths are selected from the numeric bar codes beginning on Appendix B. For example, to decode only Code 39 symbols with 14 characters, scan **Code 39 - One Discrete Length**, then scan **1** followed by **4**. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

Code 39 - One Discrete Length

Two Discrete Lengths - This option limits decodes to only those Code 39 symbols containing either of two selected lengths. Lengths are selected from the numeric bar codes beginning on Appendix B. For example, to decode only those Code 39 symbols containing either 2 or 14 characters, select **Code 39 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

Code 39 - Two Discrete Lengths

Length Within Range - This option limits decodes to only those Code 39 symbols within a specified range. For example, to decode Code 39 symbols containing between 4 and 12 characters, first scan **Code 39 - Length Within Range**. Then scan **0**, **4**, **1,** and **2**. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

Code 39 - Length Within Range

Any Length - Scan this option to decode Code 39 symbols containing any number of characters.

Code 39 - Any Length

5.4.6 Code 39 Check Digit Verification

When this feature is enabled, the scan engine checks the integrity of all Code

39 symbols to verify that the data complies with specified check digit algorithm. Only those Code 39 symbols which include a modulo 43 check digit are decoded. Only enable this feature if your Code 39 symbols contain a module 43 check digit.

Verify Code 39 Check Digit

***Do Not Verify Code 39 Check Digit**

5.4.7 Transmit Code 39 Check Digit

Scan this symbol to transmit the check digit with the data.

Transmit Code 39 Check Digit (Enable)

Scan this symbol to transmit data without the check digit.

***Do Not Transmit Code 39 Check Digit (Disable)**

5.4.8 Code 39 Full ASCII

Code 39 Full ASCII is a variant of Code 39 which pairs characters to encode the full ASCII character set. To enable or disable Code 39 Full ASCII, scan the appropriate bar code below.

See *Table 5-2* for the mapping of Code 39 characters to ASCII values.

Enable Code 39 Full ASCII

***Disable Code 39 Full ASCII**

✓ ***NOTE*** Trioptic Code 39 and Code 39 Full ASCII cannot be enabled simultaneously. If you get an error beep when enabling Code 39 Full ASCII, disable Trioptic Code 39 and try again.

Table 5-2 *Character Equivalents*

Scan Value	Full ASCII Code 39 Encode Char.	Scan Value	Full ASCII Code 39 Encode Char.
1000	%U	1032	Space
1001	$A	1033	/A
1002	$B	1034	/B
1003	$C	1035	/C
1004	$D	1036	/D
1005	$E	1037	/E
1006	$F	1038	/F
1007	$G	1039	/G
1008	$H	1040	/H
1009	$I	1041	/I
1010	$J	1042	/J
1011	$K	1043	/K
1012	$L	1044	/L
1013	$M	1045	-
1014	$N	1046	.
1015	$O	1047	/
1016	$P	1048	0
1017	$Q	1049	1
1018	$R	1050	2
1019	$S	1051	3
1020	$T	1052	4
1021	$U	1053	5
1022	$V	1054	6
1023	$W	1055	7
1024	$X	1056	8
1025	$Y	1057	9
1026	$Z	1058	/Z
1027	%A	1059	%F
1028	%B	1060	%G
1029	%C	1061	%H
1030	%D	1062	%I
1031	%E	1063	%J

Scan Value	Full ASCII Code 39 Encode Char.	Scan Value	Full ASCII Code 39 Encode Char.
1064	%V	1096	%W
1065	A	1097	+A
1066	B	1098	+B
1067	C	1099	+C
1068	D	1100	+D
1069	E	1101	+E
1070	F	1102	+F
1071	G	1103	+G
1072	H	1104	+H
1073	I	1105	+I
1074	J	1106	+J
1075	K	1107	+K
1076	L	1108	+L
1077	M	1109	+M
1078	N	1110	+N
1079	O	1111	+O
1080	P	1112	+P
1081	Q	1113	+Q
1082	R	1114	+R
1083	S	1115	+S
1084	T	1116	+T
1085	U	1117	+U
1086	V	1118	+V
1087	W	1119	+W
1088	X	1120	+X
1089	Y	1121	+Y
1090	Z	1122	+Z
1091	%K	1123	%P
1092	%L	1124	%Q
1093	%M	1125	%R
1094	%N	1126	%S
1095	%O	1127	

5.5 Code 93

5.5.1 Code 93

To enable or disable Code 93, scan the appropriate bar code below.

Enable Code 93

*Disable Code 93

5.5.2 Set Lengths for Code 93

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Lengths for Code 93 may be set for any length, one or two discrete lengths, or lengths within a specific range. To set lengths via serial commands, see *Setting Code Lengths Via Serial Commands*.

One Discrete Length - Select this option to decode only those codes containing a selected length. For example, select **Code 93 One Discrete Length**, then scan **1**, **4**, to limit the decoding to only Code 93 symbols containing 14 characters. Numeric bar codes on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel* on Appendix B.

Code 93 - One Discrete Length

Two Discrete Lengths - Select this option to decode only those codes containing two selected lengths. For example, select **Code 93 Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, to limit the decoding to only Code 93 symbols

containing 2 or 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel* on Appendix B.

Code 93 - Two Discrete Lengths

Length Within Range - This option sets the unit to decode a code type within a specified range. For example, to decode Code 93 symbols containing between 4 and 12 characters, first scan **Code 93 Length Within Range**, then scan **0**, **4**, **1** and **2** (single digit numbers must always be preceded by a leading zero).

Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel* on Appendix B.

Code 93 - Length Within Range

Any Length - Scan this option to decode Code 93 symbols containing any number of characters.

Code 93 - Any Length

5.6 Code 11

5.6.1 Code 11

To enable or disable Code 11, scan the appropriate bar code below.

Enable Code 11

*Disable Code 11

5.6.2 Set Lengths for Code 11

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Set lengths for Code 11 to any length, one or two discrete lengths, or lengths within a specific range.

- **One Discrete Length** - Select this option to decode only Code 11 symbols containing a selected length. Select the length using the numeric bar codes beginning on Appendix B. For example, to decode only Code 11 symbols with 14 characters, scan **Code 11 - One Discrete Length**, then scan **1** followed by **4**. To correct an error or to change the selection, scan *Cancel* on Appendix B.

- **Two Discrete Lengths** - Select this option to decode only Code 11 symbols containing either of two selected lengths. Select lengths using the numeric bar codes beginning on Appendix B. For example, to decode only those Code 11 symbols containing either 2 or 14 characters, select **Code 11 - Two Discrete Lengths**, then scan **0**, **2**, **1**, and then **4**. To correct an error or to change the selection, scan *Cancel* on Appendix B.
- **Length Within Range** - Select this option to decode a Code 11 symbol with a specific length range. Select lengths using numeric bar codes beginning on Appendix B. For example, to decode Code 11 symbols containing between 4 and 12 characters, first scan **Code 11 - Length Within Range**. Then scan **0**, **4**, **1,** and **2** (single digit numbers must always be preceded by a leading zero). To correct an error or change the selection, scan *Cancel* on Appendix B.
- **Any Length** - Scan this option to decode Code 11 symbols containing any number of characters within the scan engine capability.

Code 11 - One Discrete Length

Code 11 - Two Discrete Lengths

Code 11 - Length Within Range

Code 11 - Any Length

5.6.3 Code 11 Check Digit Verification

This feature allows the scan engine to check the integrity of all Code 11 symbols to verify that the data complies with the specified check digit algorithm. This selects the check digit mechanism for the decoded Code 11 bar code. The options are to check for one check digit, check for two check digits, or disable the feature.

To enable this feature, scan the bar code below corresponding to the number of check digits encoded in your Code 11 symbols.

*Disable

One Check Digit

Two Check Digits

5.6.4 Transmit Code 11 Check Digits

This feature selects whether or not to transmit the Code 11 check digit(s).

Transmit Code 11 Check Digit(s) (Enable)

*Do Not Transmit Code 11 Check Digit(s) (Disable)

✓ ***NOTE*** Code 11 Check Digit Verification must be enabled for this parameter to function.

5.7 Interleaved 2 of 5

5.7.1 Interleaved 2 of 5

To enable or disable Interleaved 2 of 5, scan the appropriate bar code below.

*Enable Interleaved 2 of 5

Disable Interleaved 2 of 5

5.7.2 Set Lengths for Interleaved 2 of 5

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Lengths for I 2 of 5 may be set for any length, one or two discrete lengths, or lengths within a specific range. To set lengths via serial commands, see *Setting Code Lengths Via Serial Commands*.

✓ ***NOTE*** When setting lengths, single digit numbers must always be preceded by a leading zero.

One Discrete Length - Select this option to decode only those codes containing a selected length. For example, select **I 2 of 5 One Discrete Length**, then scan **1**, **4**, to decode only I 2 of 5 symbols containing 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

I 2 of 5 - One Discrete Length

Two Discrete Lengths - Select this option to decode only those codes containing two selected lengths. For example, select **I 2 of 5 Two Discrete Lengths**, then scan **0**, **6**, **1**, **4**, to decode only I 2 of 5 symbols containing 6 or 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

I 2 of 5 - Two Discrete Lengths

Length Within Range - Select this option to decode only codes within a specified range. For example, to decode I 2 of 5 symbols containing between 4 and 12 characters, first scan **I 2 of 5 Length Within Range**, then scan **0**, **4**, **1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

I 2 of 5 - Length Within Range

Any Length - Scan this option to decode I 2 of 5 symbols containing any number of characters.

✓ ***NOTE*** Selecting this option may lead to misdecodes for I 2 of 5 codes.

I 2 of 5 - Any Length

5.7.3 I 2 of 5 Check Digit Verification

When enabled, this parameter checks the integrity of an I 2 of 5 symbol to ensure it complies with a specified algorithm, either USS (Uniform Symbology Specification), or OPCC (Optical Product Code Council).

*Disable

USS Check Digit

OPCC Check Digit

5.7.4 Transmit I 2 of 5 Check Digit

Scan this symbol to transmit the check digit with the data.

Transmit I 2 of 5 Check Digit (Enable)

Scan this symbol to transmit data without the check digit.

*Do Not Transmit I 2 of 5 Check Digit (Disable)

5.7.5 Convert I 2 of 5 to EAN-13

This parameter converts a 14 character I 2 of 5 code into EAN-13, and transmits to the host as EAN-13. To accomplish this, I 2 of 5 must be enabled, one length must be set to 14, and the code must have a leading zero and a valid EAN-13 check digit.

Convert I 2 of 5 to EAN-13 (Enable)

*Do Not Convert I 2 of 5 to EAN-13 (Disable)

5.8 Discrete 2 of 5

5.8.1 Discrete 2 of 5

To enable or disable Discrete 2 of 5, scan the appropriate bar code below.

Enable Discrete 2 of 5

*Disable Discrete 2 of 5

5.8.2 Set Lengths for Discrete 2 of 5

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Lengths for D 2 of 5 may be set for any length, one or two discrete lengths, or lengths within a specific range. To set lengths via serial commands, see *Setting Code Lengths Via Serial Commands*.

One Discrete Length - Select this option to decode only those codes containing a selected length. For example, select **D 2 of 5 One Discrete Length**, then scan **1**, **4**, to decode only D 2 of 5 symbols containing 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

D 2 of 5 - One Discrete Length

Two Discrete Lengths - Select this option to decode only those codes containing two selected lengths. For example, select **D 2 of 5 Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, to decode only D 2 of 5 symbols containing 2 or 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

D 2 of 5 - Two Discrete Lengths

Length Within Range - Select this option to decode codes within a specified range. For example, to decode D 2 of 5 symbols containing between 4 and 12 characters, first scan **D 2 of 5 Length Within Range**, then scan **0**, **4**, **1** and **2** (single digit numbers must be preceded by a leading zero). Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

D 2 of 5 - Length Within Range

Any Length - Scan this option to decode D 2 of 5 symbols containing any number of characters.

✓ ***NOTE*** Selecting this option may lead to misdecodes for D 2 of 5 codes.

D 2 of 5 - Any Length

5.9 Chinese 2 of 5

5.9.1 Chinese 2 of 5

To enable or disable Chinese 2 of 5, scan the appropriate bar code below.

Enable Chinese 2 of 5

*Disable Chinese 2 of 5

5.10 Codabar

5.10.1 Codabar

To enable or disable Codabar, scan the appropriate bar code below.

Enable Codabar

*Disable Codabar

5.10.2 Set Lengths for Codabar

The length of a code refers to the number of characters (i.e., human readable characters), including check digit(s) the code contains. Lengths for Codabar may be set for any length, one or two discrete lengths, or lengths within a

specific range. To set lengths via serial commands, see *Setting Code Lengths Via Serial Commands*.

One Discrete Length - Select this option to decode only those codes containing a selected length. For example, select **Codabar One Discrete Length**, then scan **1**, **4**, to decode only Codabar symbols containing 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

Codabar - One Discrete Length

Two Discrete Lengths - This option sets the unit to decode only those codes containing two selected lengths. For example, select **Codabar Two Discrete Lengths**, then scan **0**, **2**, **1**, **4**, to decode only Codabar symbols containing 6 or 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

Codabar - Two Discrete Lengths

Length Within Range - Select this option to decode a code within a specified range. For example, to decode Codabar symbols containing between 4 and 12 characters, first scan **Codabar Length Within Range**, then scan **0**, **4**, **1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

Codabar - Length Within Range

Any Length - Scan this option to decode Codabar symbols containing any number of characters.

Codabar - Any Length

5.10.3 CLSI Editing

When enabled, this parameter strips the start and stop characters and inserts a space after the first, fifth, and tenth characters of a 14-character Codabar symbol.

✓ ***NOTE*** Symbol length does not include start and stop characters.

Enable CLSI Editing

***Disable CLSI Editing**

5.10.4 NOTIS Editing

When enabled, this parameter strips the start and stop characters from decoded Codabar symbol.

Enable NOTIS Editing

***Disable NOTIS Editing**

5.11 MSI

5.11.1 MSI

To enable or disable MSI, scan the appropriate bar code below.

Enable MSI

***Disable MSI**

5.11.2 Set Lengths for MSI

The length of a code refers to the number of characters (i.e., human readable characters) the code contains, and includes check digits. Lengths for MSI can be set for any length, one or two discrete lengths, or lengths within a specific range. See Table 5-2 for ASCII equivalents. To set lengths via serial commands, see *Setting Code Lengths Via Serial Comma*nds on Appendix A.

One Discrete Length - Select this option to decode only those codes containing a selected length. For example, select **MSI Plessey One Discrete Length**, then scan **1**, **4**, to decode only MSI Plessey symbols containing 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

MSI - One Discrete Length

Two Discrete Lengths - Select this option to decode only those codes containing two selected lengths. For example, select **MSI Plessey Two Discrete Lengths**, then scan **0**, **6**, **1**, **4**, to decode only MSI Plessey symbols containing 6 or 14 characters. Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

MSI - Two Discrete Lengths

Length Within Range - Select this option to decode codes within a specified range. For example, to decode MSI symbols containing between 4 and 12 characters, first scan **MSI Length Within Range**, then scan **0**, **4**, **1** and **2** (single digit numbers must always be preceded by a leading zero). Numeric bar codes begin on Appendix B. To change the selection or cancel an incorrect entry, scan *Cancel on* Appendix B.

MSI - Length Within Range

Any Length - Scan this option to decode MSI Plessey symbols containing any number of characters.

✓ ***NOTE*** Selecting this option may lead to misdecodes for MSI codes.

MSI - Any Length

5.11.3 MSI Check Digits

These check digits at the end of the bar code verify the integrity of the data. At least one check digit is always required. Check digits are not automatically transmitted with the data.

***One MSI Check Digit**

If two check digits are selected, also select an MSI Check Digit Algorithm. (please refer to 5.11.5 MSI Check Digit Algorithm)

Two MSI Check Digit

5.11.4 Transmit MSI Check Digit

Scan this symbol to transmit the check digit with the data.

Transmit MSI Check Digit (Enable)

Scan this symbol to transmit data without the check digit.

***Do Not Transmit MSI Check Digit (Disable)**

5.11.5 MSI Check Digit Algorithm

When the Two MSI check digits option is selected, an additional verification is required to ensure integrity.

Select one of the following algorithms.

MOD 10/ MOD 11

*MOD 10/ MOD 10

5.12 GS1 DataBar

5.12.1 GS1 DataBar-14

To enable or disable GS1 DataBar-14, scan the appropriate bar code below.

Enable GS1 DataBar-14

*Disable GS1 DataBar-14

5.12.2 GS1 DataBar Limited

To enable or disable GS1 DataBar Limited, scan the appropriate bar code below.

Enable GS1 DataBar Limited

***Disable GS1 DataBar Limited**

5.12.3 GS1 DataBar Expanded

To enable or disable GS1 DataBar Expanded, scan the appropriate bar code below.

Enable GS1 DataBar Expanded

***Disable GS1 DataBar Expanded**

5.12.4 Convert GS1 DataBar to UPC/EAN

This parameter only applies to GS1 DataBar-14 and GS1 DataBar Limited symbols. When this conversion is enabled, GS1 DataBar-14 and GS1 DataBar Limited symbols encoding a single zero as the first digit have the leading '010' stripped and the bar code reported as EAN-13.

Bar codes beginning with two or more zeros but not six zeros have the leading '0100' stripped and the bar code reported as UPC-A. The UPC-A Preamble

parameter to transmit the system character and country code applies to converted bar codes. Note that neither the system character nor the check digit can be stripped.

Enable Convert GS1 DataBar to UPC/EAN

***Disable Convert GS1 DataBar to UPC/EAN**

5.13 Transmit Code ID Character

A code ID character identifies the code type of a scanned bar code. This can be useful when decoding more than one code type. The code ID character is inserted between the prefix character (if selected) and the decoded symbol.

Select no code ID character, a Symbol Code ID character, or an AIM Code ID character. The Symbol Code ID characters are listed below; (please refer to Appendix A, Miscellaneous Code Information for AIM Code Identifiers)

- A = UPC-A, UPC-E, UPC-E1, EAN-8, EAN-13
- B = Code 39, Code 32
- C = Codabar
- D = Code 128, ISBT 128
- E = Code 93
- F = Interleaved 2 of 5
- G = Discrete 2 of 5
- J = MSI
- K = GS1-DataBar
- L = Bookland EAN
- M = Trioptic Code 39
- N = Coupon Code
- R = GS1 DataBar-14, GS1 DataBar Limited, GS1 DataBar Expanded.

Symbol Code ID Character

Aim Code ID Character

*None

5.14 Linear Code Type Security Level

The MS916 offers four levels of decode security for linear code types (e.g. Code 39, Interleaved 2 of 5). Select higher security levels for decreasing levels of bar code quality. As security levels increase, the scan engine's aggressiveness decreases.

Select the security level appropriate for your bar code quality.

Linear Security Level 1

The following code types must be successfully read twice before being decoded:

Code Type	Length
Codabar	All
MSI	4 or less
D 2 of 5	8 or less
I 2 of 5	8 or less

*Linear Security Level 1

Linear Security Level 2

All code types must be successfully read twice before being decoded.

Linear Security Level 2

Linear Security Level 3

Code types other than the following must be successfully read twice before being decoded. The following codes must be read three times:

Code Type	Length
MSI	4 or less
D 2 of 5	8 or less
I 2 of 5	8 or less

Linear Security Level 3

Linear Security Level 4

All code types must be successfully read three times before being decoded.

Linear Security Level 4

5.15 Bi-directional Redundancy

This parameter is only valid when a *Linear Code Type Security Level* is enabled (please refer to 5.14 Linear Code Type Security Level). When this parameter is enabled, a bar code must be successfully scanned in both directions (forward and reverse) before being decoded.

Enable Bi-directional Redundancy

***Disable Bi-directional Redundancy**

Appendix A

Miscellaneous Code Information

AIM Code Identifiers

Each AIM Code Identifier contains the three-character string **]cm** where:

] = Flag Character (ASCII 93)

c = Code Character (see *Table A-2*)

m = Modifier Character (see *Table A-3*).

Table A-1 *Code Characters*

Code Character	Code Type
A	Code 39, Code 39 Full ASCII, Code 32
C	Code 128, ISBT 128, GS1-128, Coupon (Code 128 portion)
E	UPC/EAN, Coupon (UPC portion)
F	Codabar
G	Code 93
H	Code 11
I	Interleaved 2 of 5
M	MSI
S	Discrete 2 of 5, IATA 2 of 5
X	Code 39 Trioptic, Bookland EAN
e	GS1 DataBar

The modifier character is the sum of the applicable option values based on the following table.

Table A-2 *Modifier Characters*

Code Type	Option Value	Option
Code 39		
	0	No Check character or Full ASCII processing.
	1	Reader has checked one check character.
	3	Reader has checked and stripped check character.
	4	Reader has performed Full ASCII character conversion.
	5	Reader has performed Full ASCII character conversion and checked one check character.
	7	Reader has performed Full ASCII character conversion and checked and stripped check character.
	Example: A Full ASCII bar code with check character W, **A+I+MI+DW**, is transmitted as **]A7**AimId where 7 = (3+4).	
Trioptic Code 39		
	0	No option specified at this time. Always transmit 0.
	Example: A trioptic bar code 412356 is transmitted as **]X0**412356	
Code 128		
	0	Standard data packet, No Function code 1 in first symbol position.
	1	Function code 1 in first symbol character position.
	2	Function code 1 in second symbol character position.
	Example: A Code (EAN) 128 bar code with Function 1 character in the first position, **FNC1** Aim Id is transmitted as **]C1**AimId	
I 2 of 5		
	0	No check digit processing.
	1	Reader has validated check digit.
	3	Reader has validated and stripped check digit.
	Example: An I 2 of 5 bar code without check digit, 4123, is transmitted as **]I0**4123	

Code Type	Option Value	Option
Codabar		
	0	No check digit processing.
	1	Reader has checked check digit.
	Example: A Codabar bar code without check digit, 4123, is transmitted as **]F0**4123	
Code 93		
	0	No options specified at this time. Always transmit 0.
	Example: A Code 93 bar code 012345678905 is transmitted as **]G0**012345678905	
MSI		
	0	Mod 10 check digit checked and transmitted.
	1	Mod 10 check digit checked but not transmitted.
	Example: An MSI bar code 4123, with a single check digit checked, is transmitted as **]M0**4123	
D 2 of 5		
	0	No options specified at this time. Always transmit 0.
	Example: A D 2 of 5 bar code 4123, is transmitted as **]S0**4123	
UPC/EAN		
	0	Standard packet in full EAN country code format, which is 13 digits for UPC-A, UPC-E, and EAN-13 (not including supplemental data).
	1	Two digit supplement data only.
	2	Five digit supplement data only.
	3	Combined data packet comprising 13 digits from a UPC-A, UPC-E, or EAN-13 symbol and 2 or 5 digits from a supplemental symbol.
	4	EAN-8 data packet.
	Example: A UPC-A bar code 012345678905 is transmitted as **]E0**0012345678905	
Bookland EAN		
	0	No options specified at this time. Always transmit 0.
	Example: A Bookland EAN bar code 123456789X is transmitted as **]X0**123456789X	

According to AIM standards, a UPC with supplemental bar code is transmitted in the following format:

]E0 (UPC chars) (terminator) **]E2** (supplemental) (terminator)

In the SE955, however, the format is changed to:

]E0 (UPC chars) **]E2** (supplemental)

Therefore, a UPC with two supplemental characters, 01234567890510, is transmitted to the host as a 21-character string, **]E0**0012345678905**]E1**10.

Setting Code Lengths Via Serial Commands

There are two lengths (L1 and L2) for each variable length code type. See the individual code types in *Chapter 8, Parameter Menus* for the L1 and L2 parameter numbers.

Depending on the selected option, the scan engine decodes:

- One discrete length bar code
- Two discrete length bar codes
- Bar codes within a range of lengths within the scan engine capability
- Any length of bar codes within the scan engine capability.

Table A-3 lists the requirements for each option.

Table A-3 *Setting Variable Code Lengths*

Code Length Option	L1 value	L2 value
One discrete length is decoded.	Discrete length to decode	0x00
Two discrete lengths is decoded.	Higher length value	Lower length value
Lengths within a range are decoded within the scan engine capability.	Lower length value	Higher length value
Any length bar code is decoded within the scan engine capability.	0x00	0x00

Appendix B

Numeric Bar Codes

For parameters requiring specific numeric values, scan the appropriately numbered bar code(s).

0

1

2

3

4

5

6

7

8

9

Cancel

To change the selection or cancel an incorrect entry, scan the bar code below.

Cancel